

**What is claimed is:**

1. A failure detecting apparatus for detecting network failures, based on information obtained from  
5 a monitor target equipment which is disposed within a communication network and which has a plurality of communication interfaces, comprising:
  - a storage device storing traffic flow information indicating both an amount of receiving traffic and an  
10 amount of transmitting traffic in each interface of the monitor target equipment;
  - a computation device computing an amount of abnormal traffic, of a plurality of segments of traffic inside the monitor target equipment using the traffic  
15 flow information, and outputting an obtained flow as the amount of abnormal traffic; and
  - a determination device determining whether there is a network failure, using the amount of abnormal traffic, thereby outputting a determined result.
- 20 2. A computer-readable storage medium on which a program for enabling a computer to detect network failures, based on information obtained from a monitor target equipment which is disposed within a communication  
25 network and which has a plurality of communication

interfaces, said program comprising:

extracting traffic flow information indicating both an amount of receiving traffic and an amount of transmitting traffic in each interface of the monitor target equipment, from a storage device of the computer;  
5        computing an amount of abnormal traffic, of a plurality of segments of traffic inside the monitor target equipment, using the traffic flow information; and  
determining whether there is a network failure,  
10        using the obtained amount of the abnormal traffic.

3.        The storage medium according to claim 2, wherein said program enables the computer to compute at least one of an amount of traffic of data generated by and outputted from the monitor target equipment, an amount  
15        of traffic of data discarded by the monitor target equipment and an amount of traffic of data transmitted from the same interface after being received, of an interface of the monitor target equipment, as the amount  
20        of abnormal traffic.

4.        The storage medium according to claim 2, wherein said program enables the computer to compute a ratio of the amount of abnormal traffic to a total amount of  
25        traffic inside the monitor target equipment, and to

determine that there is a network failure if the ratio of the amount of abnormal traffic exceeds a predetermined threshold value.

5     5.     The storage medium according to claim 2, wherein  
            said program enables the computer to provide a  
virtual point indicating an end or a starting point of  
traffic inside the monitor target equipment, and to  
compute an amount of first traffic using each interface  
10    and another interface as a starting point and an end,  
respectively, inside the monitor target equipment, a  
flow rate of second traffic using each interface and  
the virtual point as a starting point and an end,  
respectively, an amount of third traffic using the virtual  
15    point and each interface as a starting point and an end,  
respectively, and an amount of fourth traffic using each  
interface and the same interface as a starting point  
and an end, respectively, and to compute a total of the  
respective amounts of the second, third and fourth traffic  
20    as the amount of abnormal traffic.

6.     The storage medium according to claim 5, where  
            said program enables the computer to compute a ratio  
of the amount of abnormal traffic to a total of the  
25    respective amounts of the first, second, third and fourth

traffic, and to determine that there is a network failure if the ratio of the amount of abnormal traffic exceeds a predetermined threshold value.

- 5     7.     The storage medium according to claim 5, wherein  
         said program enables the computer to estimate the  
         respective amounts of the first, second, third and fourth  
         traffic, based on the traffic flow information.
- 10    8.     The storage medium according to claim 2, wherein  
         said program enables the computer to obtain the  
         traffic flow information from the monitor target  
         equipment and to store the information in the storage  
         device.
- 15
9.     The storage medium according to claim 2, wherein  
         said program enables the computer to issue an alarm  
         if the computer determines that there is a network  
         failure.
- 20
10.    A carrier signal for carrying a program for enabling  
         a computer to detect network failures, based on  
         information obtained from monitor target equipment which  
         is disposed within a communication network and which  
25    has a plurality of communication interfaces, said program

comprising:

extracting traffic flow information indicating both an amount of receiving traffic and an amount of transmitting traffic in each interface of the monitor target equipment, from a storage device of the computer;  
5        computing an amount of abnormal traffic, of a plurality of segments of traffic inside the monitor target equipment, using the traffic flow information; and  
      determining whether there is a network failure,  
10        using the obtained amount of the abnormal traffic.

11.    A failure detecting method for detecting network failures, based on information obtained from monitor target equipment which is disposed within a communication  
15        network and which has a plurality of communication interfaces, comprising:

      computing an amount of abnormal traffic, of a plurality of segments of traffic inside the monitor target equipment, using traffic flow information indicating  
20        both an amount of receiving traffic and an amount of transmitting traffic in each interface of the monitor target equipment; and

      determining whether there is a network failure, using the obtained amount of the abnormal traffic.

12. A failure detecting apparatus for detecting network failures, based on information obtained from monitor target equipment which is disposed within a communication network and which has a plurality of communication interfaces, comprising:

storage means for storing traffic flow information indicating both an amount of receiving traffic and an amount of transmitting traffic in each interface of the monitor target equipment;

10 computation means for computing an amount of abnormal traffic, of a plurality of segments of traffic inside the monitor target equipment using the traffic flow rate information, and outputting the obtained amount of abnormal traffic; and

15 determination means for determining whether there is a network failure, using the amount of abnormal traffic, thereby outputting a determined result.